

CLAIMS

What is claimed is:

1. An apparatus, comprising:
an integrated heat spreader (IHS) having a groove and a cavity formed therein;
an insulating layer formed in the groove; and
a power conduit mounted in the groove, the power conduit electrically isolated from the IHS by the insulating layer, wherein the power conduit conducts a voltage relative to the IHS to deliver power to the cavity.
2. The apparatus of claim 1, wherein the cavity is to accommodate a semiconductor die, and the power conduit is to deliver power to the semiconductor die.
3. The apparatus of claim 2, further comprising:
a package substrate coupled with the IHS, the power conduit, and the semiconductor die.
4. The apparatus of claim 3, wherein the IHS and the power conduit are soldered to the package substrate.
5. The apparatus of claim 3, wherein the power conduit is mounted on a first side of the IHS, and a second power conduit is mounted on a second side of the IHS.
6. The apparatus of claim 5, further comprising:

a first input/output (IO) breakout mounted on the package substrate on a third side opposite the first side of the IHS; and

a second IO breakout mounted on the package substrate on a fourth side opposite the second side of the IHS.

7. The apparatus of claim 4, wherein the power conduit extends past an edge of the package substrate.

8. The apparatus of claim 7, wherein the power conduit comprises an edge connector.

9. The apparatus of claim 1, wherein the insulating layer is chosen from the group consisting of an epoxy and an adhesive film.

10. The apparatus of claim 1, wherein the power conduit conducts a V_{CC} voltage, and wherein the IHS conducts a V_{SS} ground.

11. A method, comprising:

forming an integrated heat spreader (IHS) having a groove and a cavity to accommodate a semiconductor die;

forming a ring comprising a conductive material, the ring having a tab extending inward, the tab corresponding to the groove;

applying an insulating layer to the groove;

mounting the ring on the IHS, and inserting the tab into the groove; and

removing the tab from the ring to form a power conduit.

12. The method of claim 11, further comprising:
soldering the die, the IHS, and the power conduit onto a package substrate.
13. The method of claim 12, further comprising:
soldering the die to the IHS.
14. The method of claim 12, wherein the power conduit, the IHS, and the die are coupled with vias in the package substrate.
15. The method of claim 11, wherein the power conduit extends past an edge of the package substrate.
16. The method of claim 11, wherein forming an IHS comprises stamping the IHS.
17. The method of claim 11, wherein the insulating layer comprises an epoxy.
18. A semiconductor package, comprising:
a package substrate;
an integrated heat spreader (IHS) coupled with the package substrate and having a groove formed therein;
a semiconductor die coupled with the package substrate and the IHS;
a power conduit mounted in the groove and coupled with the package substrate, the power conduit electrically isolated from the IHS, wherein the power

conduit conducts a current having a voltage relative to the IHS to provide power to the semiconductor die.

19. The semiconductor package of claim 18, further comprising:
a layer of insulating material between the power conduit and the groove.
20. The semiconductor package of claim 19, wherein layer of insulating material comprises an epoxy.
21. The semiconductor package of claim 20, wherein the epoxy comprises a silicone filler.
22. The semiconductor package of claim 18, wherein the power conduit and the IHS are soldered to the package substrate.